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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/735,368	12/12/2003	Charles Stanley Aldrich	2003-0377.02	1810
21972 7590 01/25/2007 LEXMARK INTERNATIONAL, INC. INTELLECTUAL PROPERTY LAW DEPARTMENT 740 WEST NEW CIRCLE ROAD BLDG. 082-1 LEXINGTON, KY 40550-0999			EXAMINER FIDLER, SHELBY LEE	
			ART UNIT 2861	PAPER NUMBER
SHORTENED STATUTORY PERIOD OF RESPONSE		MAIL DATE	DELIVERY MODE	
3 MONTHS		01/25/2007	PAPER	

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/735,368	ALDRICH ET AL.	
	Examiner	Art Unit	
	Shelby Fidler	2861	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 November 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 and 4-18 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,4-6,10-15 and 18 is/are rejected.
- 7) ☒ Claim(s) 7-9,14,16 and 17 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12 December 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 1, 4-6, 10-13, 15, and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kosaka et al. (US 6283577 B1) in view of Niimura (US 2003/0214659 A1).

Regarding claim 1:

Kosaka et al. disclose of a method of performing printhead maintenance firing in an ink jet printer that has a printhead carrier (*carriage 4, Fig. 2*) that carries an ink jet printhead (*recording head 6, Fig. 2*), the ink jet printer having a waste ink receptacle (*case 7, Fig. 2*), comprising the steps of:

decelerating the printhead carrier from a first velocity (*col. 5, lines 23-26*) after printing print data (*col. 5, lines 20-22*); and

controlling a firing of the printhead during the decelerating (*col. 6, lines 20-24*) in accordance with maintenance data (*inherent to the flushing process*) so that ink droplets ejected from the printhead during the decelerating (*col. 6, lines 20-24*) are received by the waste ink receptacle (*col. 3, lines 52-56*); wherein

maintenance data ejection occurs after print data ejection (*col. 6, lines 20-24*).

Kosaka et al. do not expressly disclose that the maintenance data being appended to the print data for a particular printing swath pass for serialization to the printhead; and

wherein a timing segment is interposed between the print data and the maintenance data.

However, Niimura discloses that the maintenance data (*preliminary discharge image data*) being added to the print data (*print image data*) for a particular printing swath pass for serialization to the printhead (*S412 of Fig. 4 and paragraph 47, lines 1-12*); and wherein a timing segment (*NULL data*) is interposed between the print data and the maintenance data (*paragraph 47, lines 7-12*).

At the time of invention, it would have been obvious to a person of ordinary skill in the art to append maintenance data to print data for a particular printing swath pass into the invention of Kosaka et al. The motivation for doing so, as taught by Niimura, is to execute an efficient processing for nozzle recovery (*paragraph 5*).

Regarding claims 4 and 12:

Niimura also discloses a step of calculating the data length of the timing segment based on a length of the print data (*paragraph 47, lines 3-12; since print image data, preliminary discharge image data, and NULL data are combined to form one raster of image data, the NULL data must be based on the length of the print image data*).

Regarding claims 5 and 13:

Niimura also discloses that the timing segment is composed of zeros data (*NULL data, paragraph 47, lines 7-12*).

Regarding claims 6 and 15:

Kosaka et al. also disclose that the waste ink receptacle is positioned at a fixed location (*col. 3, lines 52-56*).

Regarding claims 10 and 18:

Niimura also disclose that the waste ink receptacle is positioned at a predetermined location outside a print zone (*printing zone*) of the ink jet printer (*preliminary discharge positions*

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PJ1 and PJ2, Fig. 3 and paragraph 38), and positioned in relation to an edge of a sheet of print media (*Figs. 2 and 3*).

Regarding claim 11:

Kosaka et al. disclose a method of performing printhead maintenance firing in an ink jet printer that has a printhead carrier (*carriage 4, Fig. 2*) that carries an ink jet printhead (*recording head 6, Fig. 2*), the ink jet printer having a waste ink receptacle (*case 7, Fig. 2*), comprising the steps of:

receiving print data in a form of print data segments (*obvious to the transfer of data in col. 4, lines 30-33*);

generating a maintenance segment (*obvious to the flushing operation of col. 5, lines 35-38*);

accelerating the printhead carrier to a first velocity (*col. 5, lines 18-20*);

serializing the print data segments to the printhead (*col. 5, lines 35-38*);

decelerating the printhead carrier during the maintenance segment (*col. 5, lines 20-25*);

and

controlling a firing of the printhead in accordance with data in the maintenance segment (*col. 5, lines 35-38*) so that ink droplets ejected from the printhead during the decelerating (*col. 6, lines 20-24*) are received by the waste ink receptacle (*col. 3, lines 52-56*); wherein

maintenance data ejection occurs after print data ejection (*col. 6, lines 20-24*).

Kosaka et al. do not expressly disclose generating a timing segment; adding the timing segment and maintenance segment to the print data segments; and serializing the timing segment and maintenance segment to the printhead.

However, Niimura discloses generating a timing segment (*dummy data; paragraph 47, lines 3-7*);

adding the timing segment and maintenance segment to the print data segments
(*paragraph 47, lines 3-12*); and

serializing the timing segment and maintenance segment to the printhead (*paragraph 7*).

At the time of invention, it would have been obvious to a person of ordinary skill in the art to append maintenance data to print data for a particular printing swath pass into the invention of Kosaka et al. The motivation for doing so, as taught by Niimura, is to execute an efficient processing for nozzle recovery (*paragraph 5*).

Response to Arguments

Applicant's arguments filed 11/15/2006 have been fully considered but they are not persuasive.

With respect to claims 1 and 11, Applicant argues that the preliminary data of Niimura is not "appended" to the image data, but rather added to the front of the image data. While examiner agrees that Niimura does not expressly disclose the appending of preliminary data to image data, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). Instead, the test for obviousness is what a combination of the references would suggest to a person of ordinary skill in the art. Since Niimura discloses embedding the preliminary discharge data at positions corresponding to the preliminary discharge position (*paragraph 47*), and since Kosaka discloses a preliminary discharge position as the deceleration region after printing, it would have been obvious to a person of ordinary skill in the art to "append" the maintenance data rather than "adding" the maintenance data to the print image data (*see above rejection*).

With respect to claims 4 and 12, Applicant argues that Niimura does not disclose, teach, or suggest how the length of the NULL data is determined, much less that it is calculated based on the length of the print data. However, the step of calculating the length of the NULL data based on the length of the print data is inherent to the progression disclosed in paragraph 47 of Niimura. Here it is disclosed that the image data is rendered by first generating print image data and preliminary discharge data. Then, NULL data is added between the print image data and the preliminary discharge data. Since a raster line is known to have a predetermined length, the length of the NULL data must be calculated so that it fits between the print image data and the preliminary discharge data.

With respect to claims 10 and 18, Applicant argues that neither Kosaka or Niimura disclose, teach, or suggest the waste ink receptacle being positioned at a predetermined location outside a print zone of the ink jet printer, and positioned in relation to an edge of a sheet of print media. However, both Kosaka and Niimura disclose this limitation. As shown in the above rejection, Niimura discloses discharge positions PJ1 and PJ2 that are located outside of a printing zone (*Fig. 3*). As is well known in the art, and as disclosed by Niimura in paragraphs 37 and 38, the printing zone is configured to print onto a sheet of print media; as such, the location of a sheet of print media equates to the location of the printing zone.

With respect to claim 11, Applicant argues that neither Kosaka nor Niimura disclose, teach, or suggest that the print data is in the form of print data segments. However, Niimura expressly discloses generating image data, which consists of print image data, preliminary discharge data, and NULL data (*paragraph 47*). Since data, by definition, consists of data bits, this claim limitation is met. Further, Figure 6 shows a raster line of image data comprising data segments.

Allowable Subject Matter

Claims 7-9, 14, and 16-17 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claims 7-9 indicate allowable subject matter since the prior art of record does not teach a method of performing printhead maintenance firing including the step of determining a length of the waste ink receptacle, which is positioned to begin at a predetermined location, is determined by the formula: $L = [(D_{gap}/V_d) \times V_c] + (N/D_{pi})$, wherein D_{gap} is a gap distance from the printhead to a surface of the waste ink receptacle; V_d is a droplet velocity of ink droplets ejected from the printhead; V_c is a carrier velocity of the printhead carrier; N is the number of spit fires per nozzle; and D_{pi} is the resolution in combination with other features and limitations of claim 7.

Claims 14 indicates allowable subject matter since the prior art of record does not teach a method of performing printhead maintenance firing including the step of serializing the print data segments and the timing segment when the printhead carrier is moving at the first velocity in combination with other features and limitations of claim 14.

Claims 16-17 indicate allowable subject matter since the prior art of record does not teach a method of performing printhead maintenance firing including the step of determining a length of the waste ink receptacle, which is positioned to begin at a predetermined location, is determined by the formula: $L = [(D_{gap}/V_d) \times V_c] + (N/D_{pi})$, wherein D_{gap} is a gap distance from the printhead to a surface of the waste ink receptacle; V_d is a droplet velocity of ink droplets ejected from the printhead; V_c is a carrier velocity of the printhead carrier; N is the

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number of spit fires per nozzle; and Dpi is the resolution in combination with other features and limitations of claim 16.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

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Communication with the USPTO

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shelby Fidler whose telephone number is (571) 272-8455. The examiner can normally be reached on M-F 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Meier can be reached on (571) 272-2149. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Shelby Z. Fidler 1/19/2007

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